7.4 Relative Accuracy for NO_x Continuous Emission Monitoring Systems

Analyze the relative accuracy test audit data from the reference method tests for NO_x continuous emissions monitoring system as follows.

7.4.1 Data Preparation

If C_{NOx}, the NO_x concentration, is in ppm, multiply it by 1.194×10^{-7} (lb/dscf)/ppm to convert it to units of lb/dscf. If C_{NOx} is in mg/dscm, multiply it by 6.24×10^{-8} (lb/dscf)/(mg/dscm) to convert it to lb/dscf. Then, use the diluent (O_2 or CO_2) reference method results for the run and the appropriate F or F_c factor from Table 1 in Appendix F of this part to convert C_{NOx} from lb/dscf to lb/mmBtu units. Use the equations and procedure in section 3 of Appendix F to this part, as appropriate.

7.4.2 NO_x Emission Rate (Monitoring System)

For each test run in a data set, calculate the average NO_x emission rate (in lb/mmBtu), by means of the data acquisition and handling system, during the time period of the test run. Tabulate the results as shown in example Figure 4.

7.4.3 Relative Accuracy

Use the equations and procedures in section 7.3 above to calculate the relative accuracy for the NO_x continuous emission monitoring system. In using Equation A–7, ''d'' is, for each run, the difference between the NO_x emission rate values (in lb/mmBtu) obtained from the reference method data and the NO_x continuous emission monitoring system.

7.5 Relative Accuracy for Combined SO_2/Flow [Reserved]

7.6 Bias Test and Adjustment Factor

Test the relative accuracy test audit data sets for SO_2 pollutant concentration monitors, flow monitors, and NO_X continuous emission monitoring systems for bias using the procedures outlined below.

7.6.1 Arithmetic Mean

Calculate the arithmetic mean of the difference, $\bar{d}$, of the data set using Equation A–7 of this appendix. To calculate bias for an SO_2 pollutant concentration monitor, ''d'' is, for each paired data point, the difference between the SO_2 concentration value (in ppm) obtained from the reference method and the monitor. To calculate bias for a flow monitor, ''d'' is, for each paired data point, the difference between the flow rate values (in scfh) obtained from the reference method and the monitor. To calculate bias for a NO_X continuous emission monitoring system, ''d'' is, for each paired data point, the difference between the NO_X emission rate values (in lb/mmBtu) obtained from the reference method and the monitoring system.

7.6.2 Standard Deviation

Calculate the standard deviation, S_d, of the data set using Equation A–8.

7.6.3 Confidence Coefficient

Calculate the confidence coefficient, cc, of the data set using Equation A–9.

7.6.4 Bias Test

If the mean difference, d, is greater than the absolute value of the confidence coefficient, |cc|, the monitor or monitoring system has failed to meet the bias test requirement. For flow monitor bias tests, if the mean difference, $\bar{d}$, is greater than |cc| at the operating level closest to normal operating level during the 3-level RATA, the monitor has failed to meet the bias test requirement. For flow monitors, apply the bias test at the operating level closest to normal operating level during the 3-level RATA.

7.6.5 Bias Adjustment

If the monitor or monitoring system fails to meet the bias test requirement, adjust the value obtained from the monitor using the following equation:

$$CEM_i^{Adjusted} = CEM_i^{Monitor} \times BAF \qquad \text{(Eq. A–11)}$$

Where:

$CEM_i^{Monitor}$=Data (measurement) provided by the monitor at time i.

$CEM_i^{Adjusted}$=Data value, adjusted for bias, at time i.

BAF=Bias adjustment factor, defined by